WHAT IS CLAIMED IS

1. A capacitor comprising:

a buffer structure formed on a substrate;

a lower electrode formed on the buffer structure;

a capacitor dielectric film formed on the lower electrode, and formed of a perovskite ferroelectric material having a smaller thermal expansion coefficient than that of the buffer structure and having a crystal oriented substantially perpendicular to a surface of the lower electrode; and

an upper electrode formed on the capacitor dielectric film.

2. A capacitor according to claim 1, wherein

a thermal expansion coefficient of the capacitor dielectric film is larger than that of the substrate.

3. A capacitor comprising:

a lower electrode formed on a substrate;

a capacitor dielectric film formed on the lower electrode, and formed of a perovskite ferroelectric material having a larger thermal expansion coefficient than that of the substrate and having a crystal oriented substantially perpendicular to a surface of the lower electrode; and

an upper electrode formed on the capacitor dielectric film.

4. A capacitor according to claim 3, wherein

a thermal expansion coefficient of the lower electrode is larger than that of the capacitor dielectric film.

5. A capacitor according to claim 1, wherein

the capacitor dielectric film has (001) oriented tetragonal crystal structure.

6. A capacitor according to claim 5, wherein

the lower electrode has (100) oriented cubic crystal structure.

7. A capacitor according to claim 3, wherein

the capacitor dielectric film has (001) oriented tetragonal crystal structure.

8. A capacitor according to claim 7, wherein

the lower electrode has (100) oriented cubic crystal structure.

9. A capacitor according to claim 1, wherein

the capacitor dielectric film has (111) oriented rhombohedral crystal structure.

10. A capacitor according to claim 9, wherein

the lower electrode has (111) oriented cubic crystal structure.

11. A capacitor according to claim 3, wherein

the capacitor dielectric film has (111) oriented rhombohedral crystal structure.

12. A capacitor according to claim 11, wherein

the lower electrode has (111) oriented cubic crystal structure.

13. A semiconductor device comprising:

a memory cell transistor formed on a semiconductor substrate, and including a gate electrode, and source/drain diffused layers formed in the semiconductor substrate respectively on both sides of the gate electrode;

an insulation film covering the semiconductor substrate with the memory cell transistor formed on;

a buffer structure formed on the insulation film; and

a capacitor formed on the buffer structure, and including a lower electrode electrically connected to one of the source/drain diffused layers; a capacitor dielectric film formed on the lower electrode, and formed of a perovskite ferroelectric material having a smaller thermal expansion coefficient than that of the buffer structure and having a crystal oriented substantially perpendicular to a surface of the lower electrode; and an upper electrode formed on the capacitor dielectric film.

14. A semiconductor device comprising:

a memory cell transistor formed on a semiconductor substrate and including a gate electrode, and source/drain diffused layers formed in the semiconductor substrate respectively on both sides of the gate electrode;

an insulation film covering the semiconductor substrate with the memory cell transistor formed on; and

a capacitor formed on the insulation film, and including a lower electrode electrically connected to one

of the source/drain diffused layers; a capacitor dielectric film formed on the lower electrode, and formed of a perovskite ferroelectric material having a larger thermal expansion coefficient than that of the semiconductor substrate and having a crystal oriented substantially perpendicular to a surface of the lower electrode; and an upper electrode formed on the capacitor dielectric film.

15. A method for fabricating a capacitor comprising the steps of:

forming a buffer structure on a substrate:

forming a lower electrode on the buffer structure;

forming on the lower electrode a capacitor dielectric film of a perovskite ferroelectric material having a smaller thermal expansion coefficient than that of the buffer structure and having a crystal oriented substantially perpendicular to a surface of the lower electrode; and

forming an upper electrode on the capacitor dielectric film.

16. A method for fabricating a capacitor according to claim 15, wherein

in the step of forming the buffer structure, a configuration of the buffer structure is set so that a tensile stress due to a thermal expansion coefficient difference between the substrate and the capacitor dielectric film is not applied to the capacitor dielectric

film in the step of forming the capacitor dielectric film.

17. A method for fabricating a capacitor comprising the steps of:

forming a lower electrode on a substrate;

forming on the lower electrode a capacitor dielectric film of a perovskite ferroelectric material having a larger thermal expansion coefficient than that of the substrate and having a crystal oriented substantially perpendicular to a surface of the lower electrode; and

forming an upper electrode on the capacitor dielectric film.

18. A method for fabricating a capacitor according to claim 17, wherein

in the step of forming the lower electrode, a configuration of the lower electrode is set so that a tensile stress due to a thermal expansion coefficient difference between the substrate and the capacitor dielectric film is not applied to the capacitor dielectric film in the step of forming the capacitor dielectric film.

19. A method for fabricating a capacitor according to claim 15, wherein

in the step of forming the capacitor dielectric film, the capacitor dielectric film is formed to have (001) oriented tetragonal crystal structure.

20. A method for fabricating a capacitor according to claim 19, wherein

in the step of forming the lower electrode, the lower electrode is formed to have (100) oriented cubic crystal structure.

21. A method for fabricating a capacitor according to claim 17, wherein

in the step of forming the capacitor dielectric film, the capacitor dielectric film is formed to have (001) oriented tetragonal crystal structure.

22. A method for fabricating a capacitor according to claim 21, wherein

in the step of forming the lower electrode, the lower electrode is formed to have (100) oriented cubic crystal structure.

23. A method for fabricating a capacitor according to claim 15, wherein

in the step of forming the capacitor dielectric film, the capacitor dielectric film is formed to have (111) oriented rhombohedral crystal structure.

24. A method for fabricating a capacitor according to claim 23, wherein

in the step of forming the lower electrode, the lower electrode is formed to have (111) oriented cubic crystal structure.

25. A method for fabricating a capacitor according to claim 17, wherein

in the step of forming the capacitor dielectric film,

the capacitor dielectric film is formed to have (111) oriented rhombohedral crystal structure.

26. A method for fabricating a capacitor according to claim 25, wherein

in the step of forming the lower electrode, the lower electrode is formed to have (111) oriented cubic crystal structure.

27. A method for fabricating a semiconductor device comprising the steps of:

forming on a semiconductor substrate a memory cell transistor including a gate electrode, and source/drain diffused layers formed in the semiconductor substrate respectively on both sides of the gate electrode;

forming an insulation film on the semiconductor substrate with the memory cell transistor formed on;

forming a buffer structure on the insulation film;

forming on the buffer structure a lower electrode electrically connected to one of the source/drain diffused layers;

forming on the lower electrode a capacitor dielectric film of a perovskite ferroelectric material having a smaller thermal expansion coefficient than that of the buffer structure and having a crystal oriented substantially perpendicular to a surface of the lower electrode; and

forming an upper electrode on the capacitor dielectric

film.

28. A method for fabricating a semiconductor device comprising the steps of:

forming on a semiconductor substrate a memory cell transistor including a gate electrode, and source/drain diffused layers formed in the semiconductor substrate respectively on both sides of the gate electrode;

forming an insulation film on the semiconductor substrate with the memory cell transistor formed on;

forming on the insulation film a lower electrode electrically connected to one of the source/drain diffused layers;

forming on the lower electrode a capacitor dielectric film of a perovskite ferroelectric material having a larger thermal expansion coefficient than that of the semiconductor substrate and having a crystal oriented substantially perpendicular to a surface of the lower electrode; and

forming an upper electrode on the capacitor dielectric film.